# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/501,078 | 02/09/2000 | Arnon Netzer | 180/01261 | 3371 |

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| EXAMINER |
|---|
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| ART UNIT | PAPER NUMBER |
|---|---|
| 2155 | 19 |

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | Application No. | | Applicant(s) | |
|---|---|---|---|---|
| **Office Action Summary** | 09/501,078 | | NETZER ET AL. | |
| | Examiner | | Art Unit | |
| | Young N Won | | 2155 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on _10 February 2004_.

2a) ☐ This action is **FINAL**.    2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) _7-11,13,31-33 and 35-54_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _7-11, 13, 31-33, and 35-54_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

# DETAILED ACTION

1.      Claims 1-6 have been cancelled, claims 7-11, 13, and 31 have been amended,

and new claims 35-54 have been added.

2.      Claims 7-11, 13, 31-33, and 35-54 have been examined and are pending in this

action.

## Claim Objections

3.      Claim 44 is objected to because of the following informalities: The claims are

generally narrative and indefinite, failing to conform to current U.S. practice. They

appear to be a literal translation into English from a foreign document and are replete

with grammatical and idiomatic errors. Appropriate correction is required.

## Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the
United States before the invention thereof by the applicant for patent, or on an international application
by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this
title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) do not apply to the examination of this application as the application

being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

published under 35 U.S.C. 122(b). Therefore, this application is examined under 35

U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).


4.      Claims 7-11, 13, 31-33, 35-37, 39, 40, 42-45, 47-49, and 51-54 are rejected

under 35 U.S.C. 102(e) as being anticipated by Oba et al. (US 6262986 B1).

*INDEPENDENT:*

As per claims 31 and 52, Oba teaches a method of scheduling the handling of a

plurality of connections, comprising: accumulating data (see abstract: "plurality of packet

queues for temporarily storing entered data") from a plurality of connections (see col.1,

lines 54), requiring handling in each cycle of a respective cycle scheme of the

connection (see col.1, lines 19-23), by a remote access server (see Fig.1, #11);

determining quality of service levels of a plurality of the connections (see col.1, lines 23-

25 and col.5, lines 18-19); and scheduling the processor to process data from the

plurality of connections in an order determined or adjusted responsive to relative values

or responsive to the changes (see Fig.11A and col.15, lines 9-19) of the determined

quality of service levels (see col.1, lines 40-55; col.3, lines 52-60; col.5, lines 34-48; and

col.17, lines 36-43).

As per claim 47, Oba teaches of a remote access server (see Fig.1, #11),

comprising: a plurality of channel drivers (implicit: see col.3, lines 50-52) which

accumulate data from respective channels (see abstract: "plurality of packet queues for temporarily storing entered data" and col.5, lines 16-26); a processor which handles the accumulated data (see Fig.3, #31 and col.7, lines 52-53); and a scheduler (see Fig.1) which determines for at least one of the channels a quality of service level (see col.1, lines 23-25) and schedules the processor to handle data of the channels in an order determined according to the determined quality of service level (see col.1, lines 40-55; col.3, lines 52-60; col.5, lines 34-48; and col.17, lines 36-43).

_DEPENDENT:_

As per claim 7, Oba further teaches wherein the scheduling comprises scheduling the processor to handle the accumulated data from a first one of the connections at least twice before scheduling the processor to handle data from a second one of the connection (implicit: see col.6, lines 1-52, if the normalized queue length (Lmin) of the second one of the connection is not greater than the weight of the accumulated data of the first one of the accumulated data after handling the first, then the first will be handle again).

As per claim 8, Oba further teaches wherein scheduling the processor to handle the accumulated data comprises allowing the: processor to utilize up to a predetermined amount of processing time for each connection (see col.3, lines 41-46).

As per claim 9, Oba does not explicitly teach wherein the processor runs an operating system which performs preemption, therefore, it is implicit that the processor does not run an operating system which performs preemption.

As per claim 10, Oba further teaches wherein scheduling the processor comprises having the processor wait without handling data from any of the connections (implicit: see col.5, lines 14-22 & 36-41: the packet input unit handles all the incoming packets and inputs to the scheduler "a VCI as the scheduling information for specifying and order to read out the packet") if all the connections were scheduled for handling during their respective current cycles (see col.14, lines 7-10).

As per claim 11, Oba teach of further comprising measuring the waiting time of the processor in a first cycle and using the measured waiting time in determining whether to accept handling data from an additional connections (implicit: see col.21, lines 49-54).

As per claim 13, Oba teaches of further comprising processing an entire block of accumulated data of the scheduled connection responsive to the scheduling (see col.6, lines 46-52).

As per claim 32, Oba further teaches wherein the scheduling comprises scheduling the processor to handle data from at least one first connection before handling data from at least one second connection having a lower quality of service level than the at least one first (implicit: see col.1, lines 41-55).

As per claims 33 and 49, Oba teaches of further comprising changing the quality of service level of at least one of the connections while accumulating the data and changing the order of scheduling responsive to the change in the quality of service level (see claim 52 rejection above and col.17, line 64 to col.18, line 2).

As per claim 35, Oba further teaches wherein the plurality of connections connects to the remote access server through separate physical links (see Fig.10 and col.5, lines 18-19).

As per claim 36, Oba further teaches wherein the processing time of a connection does not affect the connection operation, provided the connection is processed within its respective cycle (see col.14, lines 7-10).

As per claim 37, Oba further teaches wherein at least two of the plurality of connections has same cycle times beginning concurrently (see claim 7 rejection above).

As per claim 39, Oba further teaches wherein the processor handles the data of each connection it is assigned, without interruption for handling data of a different connection (implicit: see col.5, lines 34-35).

As per claim 40, Oba further teaches wherein scheduling the processor comprises scheduling each connection once during each of its respective cycles (see col.14, lines 7-10).

As per claim 42, Oba teach wherein scheduling the processor comprises scheduling in an order determined responsive to the time remaining until the end of the respective cycle of each of the connections (implicit: see col.9, lines 6-15: to achieve consistency).

As per claim 43, Oba further teaches wherein scheduling the processor comprises scheduling in an order determined responsive to the relative values of the quality of service levels when the time remaining until the end of the respective cycle is substantially the same for a plurality of connections (see col.1, lines 41-55).

As per claim 44, Oba further teaches wherein scheduling the processor

comprises scheduling a connection waiting a longest time for processing, when a

plurality of connections are otherwise with equal right for processing (see col.6, lines 38-

52).

As per claims 45 and 53, Oba further teaches wherein scheduling the processor

comprises giving precedence to connections having a high quality of service level

(implicit: see col.1, lines 41-55).

As per claim 48, Oba further teaches wherein the plurality of channel drivers

accumulates data from respective separate physical links (see Fig.10).

As per claim 51, Oba further teaches wherein the scheduler schedules the

processor (implicit) to handle data of the channels in an order determined according to

the relative quality of service levels of the channels (implicit: see col.1, lines 41-55).

As per claim 54, Oba further teaches wherein determining a quality of service

level comprises determining for each of the connections (see col.1, lines 19-25),

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

5.      Claims 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oba et al. (US 6262986 B1) in view of Shtayer et al (US 5491691 A).

As per claim 38, Oba does not explicitly teach wherein at least two of the plurality

of connections has different cycle times.  Shtayer teaches of two of the plurality of

connections has different cycle times (see Fig.3, and col.1, lines 20-23).  It would have

been obvious to a person of ordinary skill in the art at the time the invention was made

to employ the teachings of Shtayer within the system of Oba by implementing

connections having different cycle times within the method of scheduling the handling of

a plurality of connections because Oba teaches that each packet queue corresponds "to

different virtual connections, different VC connections, different traffic classes, different

VP connections, different output links, or a combination of any two or more of these

(see col.5, lines 27-31).  Therefore, one of ordinary skill in the art will conclude that

these variations of two or more connections are not required to carry the same cycle

time because Oba does not teach such limitation.

As per claim 41, Oba does not explicitly teach of further comprising changing the

cycle time of at least one of the connections, during its operation.  Shtayer teaches of

changing the cycle time of at least one of the connections, during its operation (see

Fig.4; col.2, lines 12-16; and col.3, lines 37-41: "multiplexing").  It would have been

obvious to a person of ordinary skill in the art at the time the invention was made to

employ the teachings of Shtayer within the system of Oba by changing the cycle time of

at least one of the connections during operation within the method of scheduling the

handling of a plurality of connections because Shtayer teaches that multiplexing cells

from multiple inputs into a single outputs (in large distance transmission) without

compromising required bandwidth and transmit criterion (see col.1, lines 15-25) is

efficient and economical.

6.      Claims 46 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oba et al. (US 6262986 B1) in view of Eng et al. (US 5751708 A).

        As per claim 46 and 50, Oba does not further teaches wherein determining the

quality of service levels comprises accessing a table listing the quality of service level

for each connection.   Eng teaches wherein determining the quality of service levels

comprises accessing a table listing the quality of service level for each connection (see

Fig.2).  It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to employ the teachings of Eng within the system of Oba by

implementing the use of tables for determining the QOS levels for each connection

within the method of scheduling the handling of a plurality of connections because

tables provides Oba teaches that VCI memory can be implemented as a linked list (see

col.7, lines 60-64), therefore by providing a table or list for the VCI and the QOS, the

data or information to be employed for scheduling could be searched at the same

location providing for faster schedule processing.
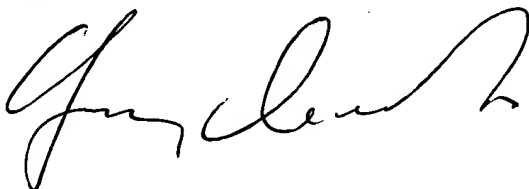
### Response to Remarks

7.      Applicant's remarks with respect to remaining claims have been considered but

are moot in view of the new ground(s) of rejection.

8.      Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Young N Won whose telephone number is 703-605-

4241. The examiner can normally be reached on M-Th: 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hosain T Alam can be reached on 703-308-6662. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Young N Won

March 17, 2004

**HOSAIN ALAM**
**SUPERVISORY PATENT EXAMINER**